

# Pre-Calculus Nature Facts

Pre-Calculus · Answer Key · 18 Questions

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**1. The Fibonacci sequence, often observed in nature, starts with 0 and 1. What is the next number in the sequence?**

- A) 2
- B) 3**
- C) 5
- D) 8

**2. Coral reefs, vital marine ecosystems, grow outwards. If a reef grows at an average rate of 1.5 cm per year, how much would it grow in 10 years?**

- A) 1.5 cm
- B) 10 cm
- C) 15 cm**
- D) 150 cm

**3. A sunflower's seed arrangement often follows a spiral pattern related to the golden ratio. If a sunflower has 34 spirals in one direction and 55 in the other, these numbers are:**

- A) Prime numbers
- B) Consecutive Fibonacci numbers**
- C) Perfect squares
- D) Powers of 2

**4. The population of a certain insect species doubles every week. If there are 10 insects initially, how many will there be after 3 weeks (assuming no deaths)?**

- A) 20
- B) 40
- C) 80**
- D) 160

**5. The Amazon rainforest produces about 20% of the world's oxygen. If it were to decrease its oxygen production by  $\frac{1}{5}$ , what percentage would it produce?**

- A) 15%
- B) 16%**
- C) 18%
- D) 20%

6. A single oak tree can release up to 100 gallons of water per day through transpiration. How many days would it take for one tree to transpire 1000 gallons?

- A) 10**
- B) 50
- C) 100
- D) 1000

7. The average speed of a migrating monarch butterfly is about 12 miles per hour. How far would it travel in 3.5 hours?

- A) 12 miles
- B) 24 miles
- C) 36 miles
- D) 42 miles**

8. A particular species of algae doubles its area every day. If it covers 4 square meters on day 1, how many square meters will it cover on day 4?

- A) 8
- B) 16
- C) 32**
- D) 64

9. The height of a certain type of bamboo can increase by up to 3 feet in a single day. If this rate is maintained, how many feet would it grow in  $\frac{1}{3}$  of a day?

- A) 1 foot**
- B) 2 feet
- C) 3 feet
- D) 9 feet

10. A desert tortoise can live for over 100 years. If a tortoise is 75 years old, what fraction of its maximum lifespan has it lived?

- A)  $\frac{3}{4}$**
- B)  $\frac{1}{4}$
- C)  $\frac{2}{3}$
- D)  $\frac{1}{3}$

11. The circumference of the Earth at the equator is approximately 24,901 miles. If a scientist were to travel  $\frac{1}{10}$  of this distance, how many miles would they travel?

- A) 249 miles
- B) 2,490 miles**
- C) 24,901 miles
- D) 249,010 miles

**12. If a river flows at an average speed of 5 miles per hour, and a salmon swims upstream against the current at 2 miles per hour, what is the salmon's effective speed relative to the bank?**

- A) 2 mph
- B) 3 mph**
- C) 5 mph
- D) 7 mph

**13. A mature giant sequoia tree can absorb about 400 gallons of water per day. How many days would it take for such a tree to absorb 2,000 gallons?**

- A) 20
- B) 40
- C) 50**
- D) 80

**14. The average depth of the Pacific Ocean is about 13,000 feet. If a diver descends to  $\frac{1}{4}$  of this depth, how deep are they?**

- A) 3,250 feet**
- B) 6,500 feet
- C) 10,000 feet
- D) 13,000 feet

**15. A bee colony can have up to 60,000 bees. If  $\frac{1}{10}$  of the bees are foraging at any given time, how many bees are foraging?**

- A) 600
- B) 6,000**
- C) 10,000
- D) 60,000

**16. The average annual rainfall in a rainforest can be 80 to 400 inches. If a rainforest receives 200 inches of rain in a year, and  $\frac{1}{4}$  of that rain falls in the first quarter, how many inches fall in the first quarter?**

- A) 25 inches
- B) 50 inches**
- C) 100 inches
- D) 150 inches

**17. A bat can eat up to 1,000 insects per hour. If a bat feeds for 2.5 hours, how many insects can it eat?**

A) 1,000

B) 2,000

**C) 2,500**

D) 5,000

**18. The speed of light in a vacuum is approximately 186,282 miles per second. If a photon travels for 0.5 seconds, how far does it travel?**

**A) 93,141 miles**

B) 186,282 miles

C) 372,564 miles

D) 931,410 miles